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*Please check mailing on back.
If incorrect, please contact
Donna Stallings at the Center.*

The Northwest Technology Transfer Center BULLETIN

Number 35

Summer 92

A newsletter of the Local Technical Assistance Program (LTAP)

Computers Can Affect Workers' Health

Computers affect the lives of almost everybody. Only recently, however, it has been recognized that computers may have an affect on the health of the people who use them.

People who work long hours at a computer report a variety of health problems. These might include back and muscle strain, eye strain, and general fatigue. Many of these problems may be caused by improperly designed work stations which force a computer operator into a stressful posture for long periods of time. Health problems also may be caused because computers allow their operators to work faster. While this may increase productivity, an operator who makes as many as 20,000 and 25,000 keystrokes in a work period allows little time for muscles to relax between tasks.

Frequent breaks away from the computer can help prevent these problems. Supervisors should make sure that staff members who spend most of their time operating a computer get these breaks. Frequent breaks, however, do not mean stopping work every 20 minutes. It means frequent breaks away from the computer. For example, in taking a "working" break, a computer operator could perform a different part of the job such as filing, making phone calls, or scheduling meetings.

Such breaks could be incorporated into safety policies that many local government agencies have written to keep staff members safe and healthy. Local agencies should consider checking for comfortable work stations as seriously as checking fire extinguishers or any other safety regulation. But if a safety policy is not in effect, the computer operator should take the responsibility for making his or her own work station as comfortable as possible. The following suggestions are good ways to start toward comfortable work stations.

Although these guidelines can help many of the health problems connected with computer use, some problems may still appear. A physician should be consulted on any long-standing health problem.

Work Station Design Guidelines

Chair

1. The seat should be adjustable within a range of 16-21 inches above the floor.
2. The back rest should be adjustable both up and down and backward and forward.
3. The seat pan and back rest should be upholstered in a material that absorbs perspiration.
4. The seat pan should be able to rotate 360 degrees without a change in seat height.
5. The chair should have five legs fitted with wheels or casters.

Work Surface

1. The height of the work surface should be adjustable within the range of 26 to 30 inches from the floor.
2. The total area of the work surface should be adequate for the tasks to be routinely performed.
3. Corners on the work surface should be rounded.
4. Sufficient space should be available beneath the adjusted work surface to allow for adequate lateral and vertical movement of the legs.

VDT/PC

1. The support surface should have adequate depth to allow the user to adjust the screen-viewing distance.
2. The keyboard should be a separate component from the screen with a cable at least three feet in length.
3. The angle of the keyboard from the surface on which it rests should be adjustable.
4. The screen should have an anti-reflection surface.
5. The screen should have focus, brightness, and contrast controls readily adjustable and accessible to the user.

Work Station Design

1. The top of the screen should be no higher than eye level.
2. The face of the screen should be tilted back 10 to 20 degrees provided this does not increase glare.
3. The screen face should be about 18 inches from the user's eyes.
4. The top surface of the space bar and bottom row of keys should be about 2½ inches from the top of the support work surface.
5. The seat height should be adjusted so that the upper legs are parallel with the floor and the feet are resting flat on the floor.
6. The backrest should be adjusted to firmly and comfortably support the small of the back.

Work Environment

1. The level of light at the VDT work station should be slightly less than that for the general office.
2. Auxiliary work station lighting should be provided for tasks requiring higher light levels.
3. Fluorescent lights should be fitted with diffusers and parabolic louvers.
4. Windows should be covered with drapes or blinds to limit direct sunlight.
5. Walls, floors, and work station surfaces should be of flat finish and subdued colors to reduce glare.

Noise

1. Excessively noisy machines — such as some printers — in the vicinity of the work station should have sound enclosures.
2. Areas with multiple work stations should have features which minimize noise such as carpeted floors or upholstered partitions.

Location

1. Individual work stations should be physically separate from each other and from distractions such as high activity or traffic areas.
2. The amount of space allocated for work stations should be adequate for the tasks to be routinely performed.
3. The work station should contain or have adjacent to it adequate storage space for necessary work-related materials.
4. The work station should be located near electrical outlets to avoid the use of extension cords.

Job Content

Even in situations where the work station has been ideally designed, individuals using VDTs for considerable portions of their work time may still be subject to various physical stresses related to VDT use. Such stresses can be minimized by incorporating periodic alternative-task breaks into the work schedule. Alternative tasks should involve physical movement on the part of the user and should, to the extent possible, be less visually demanding than VDT use.

Vision

Many visual problems associated with using VDTs can be traced directly to poor eye care. Uncorrected or improperly corrected vision problems are more likely to cause visual fatigue. For these reasons, all VDT users should have periodic eye examinations to ensure that any vision problems are discovered and promptly corrected.

Other Physical Conditions

As is true of many physically demanding tasks, prolonged VDT usage can cause certain pre-existing health conditions to worsen. This may be particularly true for various muscle problems. Individuals with such problems should consult with their physicians regarding limitations to be placed on their usage of VDTs.

(Source: Larry Mendenhall for "Technology News," Iowa's T² Center.)

Need to know more?

**Contact WSDOT's Library
(a free T² resource)**

(206) 753-2107
SCAN 234-2107



Standing on Your Own Two Feet

And Other Reasons to Use Foot Protection

Do you wear safety shoes on the job? If you think you don't need them, consider that about one in five work-related accidents involves the foot and leg. Falling objects cause most of these, but compression, punctures, burns, and slipping on wet surfaces are also common. All these accidents are easily prevented by wearing the proper safety shoes.

Style and Comfort

When you get ready to choose a pair of safety shoes, you are going to be surprised at the options available to you. Today's safety shoes come in a wide variety of types, styles, materials, and weights. Many safety shoes look just like street shoes and cost very little more. And they are comfortable! The average safety shoe weighs on 1½ ounces more than street shoes. Let's look at some of the kinds of workplace hazards that you may encounter and the types of shoes designed for them.

Mechanical Hazards

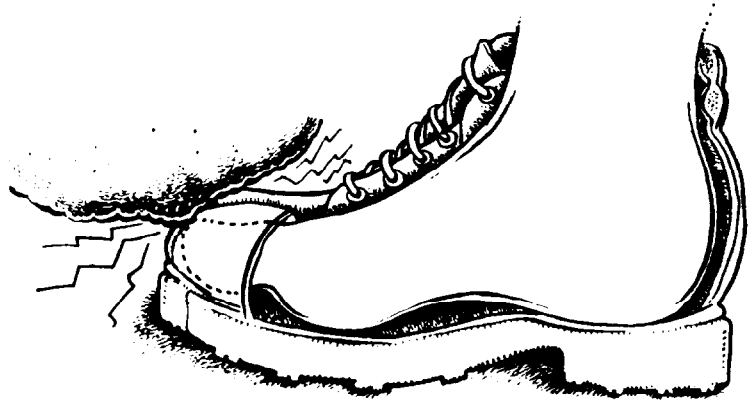
Falling objects, compression from rolling objects, and punctures are easily the top three sources of foot injury, and the ones the standard safety shoe protects against. Typically, your safety shoe will have steel toe caps to guard against injuries from falling objects and compression, and instep protection of aluminum, steel, fiber, or plastic to protect the top of the foot. Steel insoles or reinforced metal soles protect from puncture. To protect against slipping on wet or oily surfaces, use wooden soles or cleated, nonslip rubber or neoprene soles. Icy surfaces may require strap-on cleats.

Electrical Hazards

The buildup of static electricity on your body can be dangerous when you are working near explosive or highly flammable substances. Workers in such environments wear safety shoes with leather, cork, or other conductive soles and no exposed metal, which could cause sparking. For protection from live electrical current, shoes, including metal parts, must be thoroughly insulated with rubber soles. For high-voltage hazards, use conductive shoes, insulated shoes with a connector from calf to heel to pass electricity to the floor or ground. Electrical-hazard shoes must be kept dry.

Extreme Heat or Cold

In extreme cold, wear shoes with moisture-proof insulation and insulated socks. Wooden-soled shoes or slip-on sandals protect against heat; surfaces too hot for wood soles require aluminized heat-protective shoes or boot. When working around molten metal and sparks, use foundry boots with elastic gores for quick removal in case hot metal or sparks get inside.



Chemical Hazards

Many chemicals and solvents can burn or eat away ordinary shoe materials. For protection from these hazards wear rubber, neoprene, or plastic footwear, depending on the type of chemical you are exposed to and your company's policy.

Other Protection

Your job may require additional protection, such as metatarsal guards, which cover the tops of the shoe for grater protection from falling objects; puncture-proof inserts; shin guards; or metal footguards, which strap over the shoe. Disposable plastic over-shoes protect against infection and contamination from sanitation hazards.

Your Shoes

Be sure your safety shoes are approved by the American National Standards Institute (ANSI) — the rating should be stamped inside your shoe. Choose shoes that you can wear comfortably for hours. For the best protection, keep your shoes clean and dry, and inspect them regularly for cuts, cracks, and embedded metal. Replace them when they get worn.

If you follow company rules for safety and protective equipment, stay on the lookout for hazardous conditions and equipment, and wear protective foot wear appropriate for your job, you can be sure that you are doing everything.

Preventing workplace injuries is a matter of life and limb. Protect yourself by wearing the right protective footwear for your job.

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In the News

NACE Action Guide on Highway Safety Improvements Now Available

This guide was prepared by the National Association of County Engineers (NACE) to assist county agencies to identify various road hazards that may be present on their roads and to help them in developing safety improvements. The guide is directed toward rural counties with a very limited engineering staff.

The guide covers hazards and their cures (includes sight distance in curves, narrow bridges and culverts, railroad crossings, construction and maintenance zones, and sign vandalism), developing a safety improvement program (including identifying problem locations, developing cost-effective projects, setting priorities, etc.), roadway lighting (including designs of light poles and location of lighting), and guardrails (including types of guardrails and end treatments).

This guide is available for \$6 for nonmembers or \$4 for members. Call NACE at (202) 393-2630.

Plans Made for Asphalt Conference

Ed Schlect of the Asphalt Institute informs us that plans for the Asphalt Conference are proceeding on schedule. This annual event will be held at the University Inn in Moscow, Idaho on October 22, 1992. Additional information will be sent out later this summer. For \$30, each participant can attend sessions on the latest on (1) Tire Rubber in Asphalt, (2) SHRP Mix-Design Procedure, (3) Chip Seals in the Urban Setting, and (4) the European Asphalt Tour — Results and Recommendations.

Glassphalt Demonstration Project

The Roads and Engineering Division of the Department of Public Works of King County is performing a demonstration project this summer to pave one mile of urban road with glassphalt. The scope of this study is to conduct laboratory research and to construct a road section for field evaluation. Glassphalt is an asphalt concrete paving mix which has had a portion of its mineral aggregate substituted with crushed glass. The information was presented to the members, WSACE/PWD at the Annual Convention in Ocean Shores by King County Road Engineer, Lou Haff. Mr. Haff went on to say, "The stimulus for this project is the need to develop alternate uses for recycled glass in support of the aggressive glass recycling program being accomplished in King County." Glassphalt technology is not new and has been experimented with for many years. The test mile section will be composed of four segments consisting of the following mix designs: (1) 5 percent glass substitution (small aggregate), (2) 10 percent glass substitution (small aggregate), (3) 5 percent glass with hydrated lime as a bonding agent (small aggregate), and (4) 10 percent glass substitution with hydrated lime as a bonding agent (small aggregate). If you would like additional information about King County's Glassphalt Demonstration project, please call Lou at (206) 296-6590 or, Swang Rims, Pavement Engineer, at (206) 296-8100.

(Source: "Road Runner" CRAB/WSACE, June 1992.)

1993 Road Builders' Clinic Planning Underway

The Clinic's Planning Committee met on June 11 to hash out the program for the 1993 clinic. With attendee's comments from the previous clinic, the committee settled on a diversified agenda for 1993. Tentative session topics and moderators are:

Session 1 — The Intermodal Surface Transportation Act (ISTEA), Gill Mallory, WSDOT

Session 2 — Transportation Planning, Steve Loop, Idaho T² Center

Session 3 — New Technology, Les Jacobson, WSDOT

Session 4 — Environmental Issues, Jerry Nichols, Spokane County

Session 5 — Pavement (Road) Maintenance, Robert Smith, ITD Materials Lab

Session 6 — Management Issues, Jerry Faye (TIB) and George Crommes, NW T² Center, WSDOT

Replacing Cecil Hathaway of the University of Idaho is Michael Kyte who will co-chair the Clinic with John Cook of WSU. Others that put their heads together in planning the 1993 clinic were:

- Jack Myers, USFS Kootenai National Forest
- Bob Smith, Idaho Transportation Department
- Fouad M. Bayomy, University of Idaho
- John Netrinke, USFS, IPNF
- Jerome J. Nicholls, Spokane County
- Alan O. King, WSDOT
- Jerry Faye, Transportation Improvement Board (TIB)
- Keith Metcalf, WSDOT, District 6
- George D. Crommes, NW T² Center, WSDOT
- Stephen Loop, Idaho T² Center, ITD
- Vern Wagar, County Road Administration Board (CRAB)
- Mary Carloye, WSU Conferences and Institutes



A Northwest Event!

September 15-17

Clark County Fairgrounds

Vancouver, Washington

- ☐ 163 acres of exhibits and demonstrative equipment use
- ☐ Indoor displays of equipment, products, and services
- ☐ Free seminars
- ☐ Free registration if pre-registered

PIE is a trade exposition with exhibits of equipment, materials, tools, and services available to utilities, governmental agencies, and contractors. In addition workshop presentations provide fresh insights into the latest technology and ways of doing things in public works construction.

Planned exhibits include: heavy construction equipment, various truck bodies, truck mounted equipment like digger derricks, cranes, and generators; trenchers, backhoes; hydraulic equipment; safety equipment; conduits; communication products like fiber optics; test equipment; automated controls; and many others.

Seminars also will be given on techniques for training equipment operators, safety standards including OSHA, and environmental issues, regulations, and procedures.

What Others Say:

Mr. Robert R. Axelson, former WSDOT Equipment Manager, notes "This show gives all operators and equipment people a place where they can go to view and compare equipment and accessories in *one location* that would otherwise be unavailable to the majority of these people. Visiting the PIE show will be cost effective and informative when looking for new or innovative equipment."

Neil Gaiser, Equipment Manager for Pierce County Public Workers says, "Over the past four years we have been sending employees of Pierce County Public Works to the Equipment Exposition. This once a year Expo affords our employees a chance to see what is new in the equipment line as well as gathering new information on "Hot Topics" in the seminars offered. We have been able to put to use some of the new ideas that have been brought back from the Expo."

For more information contact

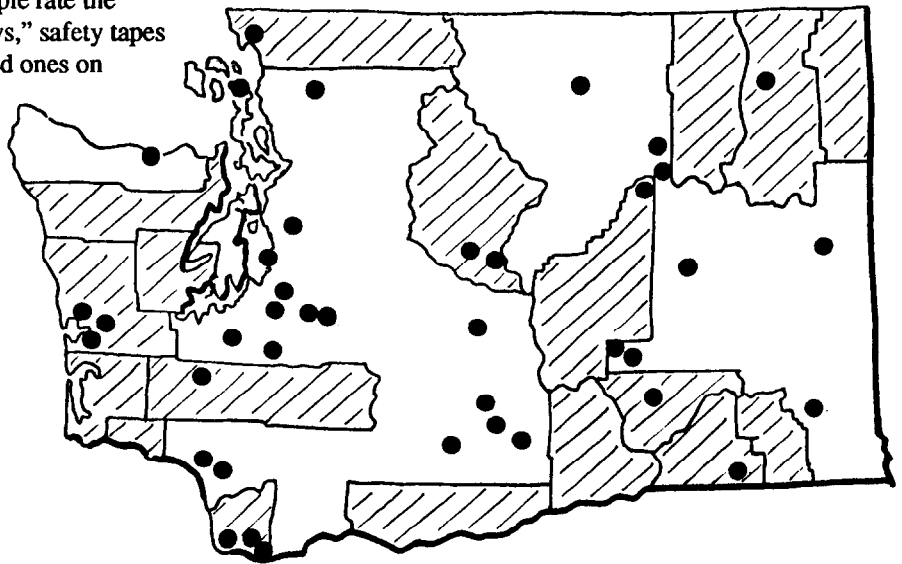
Pacific International Exposition • 523 NE Columbia Boulevard • Portland, OR 97211

800-624-2569 • (503) 285-3069 • FAX 503-285-3269

63 Spring "Road Shows"

Bringing Training to Local Government

Hans Frankmoelle, our road show trainer, was quite busy this spring with 63 road shows throughout the state. This record amount allowed 885 people from 63 agencies to take advantage of informal training brought to the job site. Hans notes that individuals rated the workshops highly. "Excellent" ratings were given by 33 percent of the attendees and "good" ratings by 63 percent. The remaining 4 percent of the people rate the workshops "fair." As with previous "road shows," safety tapes were the ones most requested with the best liked ones on equipment safety.



A Few Words About Training

By Hans Frankmoelle

We have now completed the Spring Road Show. We are pleased to provide information and training for so many local agencies who otherwise would not have access to all the data and material we can supply. It is difficult — especially for a small agency — to provide training material and experienced personnel for an in-house program of this type.

While most people agree that training of personnel is not only important but beneficial for the employer, we frequently get so loaded down with the pressures of our jobs that we do not seem to find the time to participate in this type of program. In addition, it is very difficult to measure the success of the training since benefits are often invisible, as the accident that did not happen,

the citation that was not received, the equipment that did not break down, or even the tort claim that was avoided.

While the greatest emphasis of our program is placed on safety and equipment training — and properly so — we also have the resources to provide training for current and future lower management personnel. We are constantly trying to increase and improve our library of video tapes to keep up with new requirements and techniques, so that we may continue to provide the services helpful to local agency personnel.

Learning is a never-ending process. As we get older we realize more and more that we will never complete the learning process since every step opens up new fields of knowledge we have yet to explore.

Spring 1992 Road Shows

Date	Agency(s)	Host	Location	Person		
				Persons	Hours	Hours
Mar 5	Lewis Co	Wm. Forth	Chehalis	9	3	27
6	Puyallup	C. Veitenheimer	Puyallup	11	3±	30
9	Eatonville	Seth Boettcher	Eatonville	5	4	20
10	Centralia	Carl Knapp	Centralia	12	4±	46
11	Lewis Co	Art Savage	Pleasant Valley	16	3	48
11	Lewis Co	John Brannan	Mossyrock	17	2½	43
12	Hoquiam, Aberdeen, Cosmopolis, Grays harbor Co Milton	Ms. Fran Eide Mark Burlingame	Hoquiam Milton	17 8	7± 3½	117 28
13	Bonney Lake, Sumner	Bruce Gould	Bonney Lake	15	3	45
16	Longview	Steve Harris	Longview	14	3½	49
16	Kelso	Harry O'Neill	Kelso	11	2	22
17	Camas/ Washougal	Monte Brachman	Camas	12	3±	33
17	Vancouver	Bob Tabor	Vancouver	11	3	33
18	Clark County	Amie Talvitie	Vancouver	17	3½	60
18	Wahkiakum Co	Jack Tobin	Cathlamet	9	2	18
19	Pacific Co	Charles Mikkola	Long Beach	11	4±	43
19	South Bend	Meeting With Superintendent		1	3	
23	Kirkland	Steve Garrett	Kirkland	23	3½	81
24	Jefferson Co	Earl Wells	Hadlock Shop	21	4	84
24	Port Angeles	Dale Warner	Port Angeles	11	1½	17
25	Kitsap Co	Rick Rice	Poulsbo	16	4	64
25	Kitsap Co	Seth Posey	Port Orchard	20	3.8±	72
26	Kitsap Co	Jack Gandette	Chico	27	3.5	95
27	Mason Co	John Flynn	Shelton	25	3	75
30	Ferndale	Scott Cheldelin	Ferndale	15	7	105
31	Sedro Woolley	Jim Neher	Sedro Woolley	8	4	32
Apr 1	Anacortes	Doug Terry	Anacortes	15	2	30
1	Whatcom Co	Marlen Hansen	N. Bellingham	6	3	18
3	Des Moines	Frank Olson	Des Moines	12	3	36
6	Klickitat Co	Gordon MacLeod	White Salmon	12	2½	30
7	Klickitat Co	Steve Nygaard	Goldendale	11	3½	39
Apr 7	Toppenish	Jo Miles	Toppenish	5	2½	12
8	B.I.A. (Yakima)	Jim Arnoux	White Swan	3	8	24
9	Benton Co	Jim McAuliff	Prosser	14	2	28
9	Benton Co	Jim McAuliff	Kennewick	13	2	26
14	Wapato	Don Groth	Wapato	13	3	39
16	Ellensburg	Paul Rugh	Ellensburg	30	2	60
21	Cashmere	Craig Prpich	Cashmere	6	5	30
21	Wenatchee	Curt Greer	Wenatchee	16	3	48
22	Grant Co	M. A. Murray	Quincy	20	2	40
22	Grant Co	M. A. Murray	Moses Lake	16	1½	24
23	Grant Co	M. A. Murray	Hartline	18	3½	63
24	Omak	Fred Sheldon	Omak	12	3	36
28	Ferry Co	Larry Beardslee	Republic	14	4	56
28	Ferry Co	Larry Beardslee	Inchelium	8	4	32
29	Colville	Craig Blum	Colville	13	3	39
29	Stevens Co	Duane Lehman	Colville	14	3½	49
30	Stevens Co	Duane Lehman	Chewelah	12	4½	54
30	Stevens Co	Duane Lehman	Hunters	22	3	66
May 4	Othello, Royal City, Mesa	Gary Armstrong	Othello	5	2	10
5	Franklin Co	Merle George	Pasco	25	4	100
6	Pomeroy	Stan Warren	Pomeroy	5	2½	13
6	Columbia Co	Tom Bense	Dayton	19	3	57
7	Walla Walla Co	Norm Skiles	Walla Walla	32	4	128
8	Walla Walla	Stan Williams	Walla Walla	11	4	44
11	Yelm, Rainier	Tim Peterson	Yelm	7	4	28
12	Chelan Co	Ray Langston	Wenatchee	6	2½	15
13	Cheney	Paul Schmidt	Cheney	13	1	13
13	Odessa	Roger Sebesta	Odessa	5	4	20
14	Pend Oreille Co	Michael Rabe	Cusick	26	4	104
19	B.I.A. Nespelem	Wayne Kensler	Nespelem	10	7	70
20	Grand Coulee, Coulee Dam	Frank Thomas	Grand Coulee	8	4	32
21	Yakima	Ken Kohagen	Yakima	41	1½	61
21	Toppenish	Jo Miles	Toppenish	6	2½	15

Totals — 63 sessions, 63 agencies, 885 people, 2,876 person-hours

Any Writers Out There?

We are continually looking for technical and management materials from our readers. Do you have a particular subject that you want to share with others in public works? Are there any innovations, success stories, or general news that you have been putting off telling others? We can help you. Contact me, George Crommes, at (206) 753-0143 or SCAN 234-0143. Remember, others can benefit from your experiences and ideas. I am looking forward to your call or letter.

Employee Development

Educational Opportunities

The purpose of this column is to inform you of the numerous educational opportunities that exist for our Washington State and adjacent states' transportation people. We also place this information on our electronic bulletin board.

Northwest Technology Transfer Center (206) 753-1028

The T² center offers or supports numerous workshops of interest to public works agencies in Washington. Announcements are advertised in the newsletter, the Bulletin, and flyers are sent out to public works agencies requesting their interest prior to the workshops.

- ☐ **Real Estate Procedure Course.** September 28 through October 9, 1992. WSDOT: Real Estate Services has 4 to 6 openings for local agencies at this two week course. Contact Ken Leingang (206) 753-6116 or SCAN 234-6116. Cost is free.
- ☐ **Slope Maintenance and Slide Restoration.** September 15, Moscow, ID, University Inn. (A joint workshop with the Idaho T² Center.) Contact Steve Loop at (208) 334-8267. Tentative cost of \$50.
- ☐ **NHI's Culvert Inspection.** September 15. WSDOT's Staff Development Office has a few openings for local agencies at this 1-day workshop. Contact Carmen Harris at (206) 753-7135.
- ☐ **T² Centers "Road Shows."** Starts September 15, 1992.
- ☐ **County Road Administration Board (CRAB).** If there is a special class you would like to see developed for counties, contact CRAB at (206) 753-5989.



Battelle (206) 527-0542

Registrations for workshops are taken on first come, first serve basis. Call Battelle for additional information.

- ☐ **The Manager as a Leader.** December 7-9, Seattle. Cost \$985.
- ☐ **The Effective Manager.** October 13-15, Seattle. Cost \$895.
- ☐ **The Engineer as a Manager.** December 3-4, Seattle. Cost \$885.
- ☐ **Effective Project Management.** October 5-6, Seattle. Cost \$885.
- ☐ **Managing S/B Software Projects.** July 27-28 and November 16-17, Seattle. Cost \$885.

Asphalt Institute (206) 786-5119

- ☐ **Asphalt Conference.** October 22, Moscow, Idaho. Contact Ed Schlect.

National Career Workshops 1-800-258-7246

- ☐ **How to Supervise People.** July 30, Portland; July 31, Olympia.
- ☐ **How to Handle Difficult People.** August 6, Yakima; August 7, Seattle; September 15, Olympia, September 16; Tacoma, September 17, Bellevue. Cost \$69.

Washington State University (206) 840-4575

- ☐ **How to Apply Deming's Quality Improvement Principles to Public Services.** September 17-18, Portland Red Lion Inn Downtown. Cost \$795.

- ☐ **Improving Management Skills of the New or Prospective Manager.** September 24-25, Portland Red Lion, Jantzen Beach. Cost \$695.
- ☐ **The Engineer as Manager.** October 6-8, Red Lion Inn, Columbia River, Portland. Cost \$795.

Writing Services (206) 459-2031

- ☐ **Clear Writing Workshop.** August 11-12, Olympia. Cost \$230.
- ☐ **Writing Policies and Procedures.** August 13, Olympia. Cost \$150.

KEYE 1-800-821-3919

- ☐ **The Efficient Assistant.** August 6, Richland; August 20, Seattle; August 25, Seattle; August 26, Spokane. Cost \$125.

TRANSFETY 1-800-777-2338

- ☐ **Road Work Accidents, Prevention and Litigation Seminar.** August 21, Seattle, Warwick Hotel. Cost \$195 for early registration.

Conferences and Meetings



- ❑ AASHTO Task Force on Geometric Design, July 19-24, Newport, Oregon.
- ❑ ASCE Fourth International Conference on Microcomputers in Transportation, July 22-24, 1992, Baltimore, Maryland. More information at 1-800-548-ASCE.
- ❑ AASHTO Joint Development Task Force Meeting, July 26-27, Seattle, Washington.
- ❑ National T² Conference, August 2-5, 1992, Lexington, Kentucky.
- ❑ 62nd Annual ITE Meeting, August 9-12, 1992, Washington, DC. Contact ITE at (202) 554-8050.
- ❑ Washington State Transportation Conference, September 8-11, 1992, SeaTac.
- ❑ Pacific International Exposition (PIE), September 15-17, 1992, Clark County Fairgrounds, Vancouver, Washington. Contact Jeannie Perrin, 1-800-624-2569.
- ❑ Intergovernmental Public Facilities Finance Conference, September 22-23, 1992, Wenatchee.
- ❑ Snow and Ice Control Seminar, September 28-29, 1992, Chicago, Illinois. Sponsored by SHRP and FHWA. Seminar to cover effective snow fences and road weather information systems. Contact (708) 206-3221 by August 14, 1992.
- ❑ Road and Street Maintenance Supervisors School, October 6-8, Spokane Red Lion; November 4-6, Everett Pacific, (509) 335-3530.
- ❑ Northwest Concrete Pavement Short Courses and Seminar, October 13-16, 1992, Red Lion Columbia River Hotel, Portland, Oregon. Contact Jean Canfield, (206) 943-7732.
- ❑ APWA (WA) Fall Conference, October 13-16, Quality Inn-Clarkston, Washington. Contact Dave Mandyke (509) 625-6320 or Jerry Copeland (509) 575-6005.
- ❑ Asphalt Conference, October 22, Moscow, Idaho. Contact Ed Schlect, (206) 786-5119. Cost \$30.
- ❑ Washington State Association of Counties Legislative Conference, November 11-13, 1992, Spokane-Sheraton.
- ❑ Sixth Annual 4R Conference and Road Show, December 6-8, 1992, Georgia World Congress Center, Atlanta, Georgia. Contact Gillette Exposition Group, (708) 298-6649.
- ❑ Geosynthetics Conference, March 30 through April 1, 1993, Vancouver, B.C. Contact (612) 222-2508 or 1-800-225-4324.
- ❑ Pacific Rim Transtech Conference, August 12-19, 1993, Seattle, Washington. For more information, contact James R. Buss, WSDOT, (206) 753-6014.

Employment Opportunity — T² Trainer

Two openings are available with the NWT² Center, Department of Transportation, as the Technology Transfer Trainer. Each position is intermittent part-time, being approximately three months in the spring for one position and three months in the fall for the other, of each year. \$13.14 – 16.80 per hour DOQ.

Under the direction of the T² Manager, the trainer conducts training sessions and provides technical advice to public agencies in Washington State. The trainer coordinates with public works directors, road and street superintendents and others in selecting and presenting various video materials and leads discussions on technical subjects of construction and maintenance. This person also represents the T² Center at workshops and association meetings as designated by the Center's Manager.

Considerable transportation experience is required preferably at the rural city, county, or state level in maintenance or construction. Ability to speak to groups and being sensitive to audiences is required. Considerable travel is also required.

Contact Stan Sanders at 753-1065 or George Crommes, NWT² Manager, WSDOT Local Programs, Transportation Building, P.O. Box 47390, Olympia, WA 98504-7390 for questions and application form. Each candidate should use a standard WSDOT application form which may be supplemented by a resume of experience. **Closing date is August 15, 1992.**

Traffic Notes

Traffic and Technical Assistance Through WSDOT

By Ed Lagergren

Many agencies need to gather data or obtain information but do not have the capability. The data may only be needed for a specific problem where it is not practical to invest in the equipment necessary to gather the data. Following are examples of some of the help available from the Washington State Department of Transportation.

Traffic Counting

WSDOT's Transportation Data Office often needs traffic volume counts off the state system for planning purposes. They have "old" counters that are no longer in use but still able to count traffic. Planning technicians travel from Olympia to all areas of the state to set counters on a regular basis. They are willing to stop in, drop off some counters and give the agency instruction on how to set them. When the agency is finished with the counters, WSDOT will pick them up with the counter tapes. They will then read the tapes and send the results to the agency. This is a free service. The Transportation Data Office only wants a copy of the counts for their records.

Traffic Signal Coordination

Agencies installing traffic signals and in need of advice on coordinating their operation can obtain limited help from WSDOT Headquarters Traffic Section. Headquarters Traffic has a person who works exclusively with WSDOT districts to improve signal operation on state highways. He is willing to answer questions and provide brief telephone assistance.

Transportation Library

WSDOT Transportation Library contains a vast amount of transportation related information. The library service is available to any agency. The library also has a computer with a CD ROM containing the state RCWs and WACs. If you would like any RCW or WAC looked up but can't remember the number, the computer can search and find it based on a few key words. (Barbara Russo quietly retired on the 30th of June after many years as librarian. She will be missed.)

These are just three of the many areas where WSDOT can help local agencies. Some areas like the Geographic Services Section (aerial photos, etc.) do charge a fee. If you have a problem or question and think WSDOT may be of some assistance give me a call and I'll point you in the right direction. Also, if you have a traffic question or concern, please contact me at (206) 753-1073. I am now temporarily located in the Jefferson Apartments across from the new Department of Natural Resources Building.

Status of Local Research Projects

Low Speed Crash Test Criteria

A letter has been sent to all states soliciting interest in participating in a regional pooled fund project to develop low speed guardrail designs. Responses were due by the end of June. The scale of the project will be determined by the amount of funds made available through this solicitation. Approximately \$24,000 has been committed from other states. This, along with approximately \$35,000 by Washington, provides adequate funding to proceed. Approval to proceed has been requested of FHWA.

Heavy Vehicles vs. Urban Pavements

The city of Seattle Engineering Department began work on the project on April 15, 1992. The project will run through May 15, 1993. The objective is to evaluate the impact of heavy axle bus loads, in particular the Metro Breda dual-mode bus, using the Seattle local street system as a prototype. Further, to explore solutions to remedying the heavy axle loads in order to achieve as close as possible the same impacts as legal loads.

Speed Control Strategies

No progress has been made in selecting a principal investigator for this study. The Research Office is proceeding to get a consultant to do the study.

RoadRater Correlation Study

GeoEngineer Inc. began work on the project on April 15, 1992. The project will run for 20 months. A roadrater users group has been formed and met on March 24 in Yakima to discuss the project and roadraters in general. This group also met on June 17. Test sections of pavement are being defined for data collection of seasonal factors.

**For more information contact Keith Anderson at
(206) 586-8959.**

Selected References

The following can be obtained directly from the sources listed.

Hot Mix Asphalt Materials, Mixture Designs, and Construction. This new book by the National Asphalt Pavement Association (NAPA) with over 500 pages covers asphalt refining, uses, and properties; aggregates; HMA mixture design; asphalt mixture properties; equipment and construction; special mixtures, recycling, and additives; performance/distress of HMA. Available for \$45 from NAPA Education Foundation, NAPA Building, 5100 Forbes Boulevard, Lanham, MD 20706-4413 or telephone (301) 731-4748.

12 Tools for Improving Mobility and Managing Congestion. The Urban Land Institute created this booklet to build upon previous publications by identifying successful tools that are being used by many communities to reduce traffic congestion. A wide array of approaches and ideas are noted. Contact Urban Land Institute, 625 Indiana Avenue NW, Washington, DC 20004 or telephone 1-800-321-5011.

Hot Mix Asphalt Paving Handbook. Covers the state of the art of asphalt paving operations including plant operations, transportation of materials, surface preparation, laydown, and compaction. It is aimed at field personnel who do the work and agency personnel who oversee and inspect the work. Available from APWA, PO Box 94310, Chicago, IL 60678-4310. Members \$25, nonmembers \$30.

Tackling Gridlock. Shows how to improve traffic flow, increase traffic capacity, encourage mode shifts, and manage the traffic system. It makes the congestion problem less perplexing and provides public works administrators, decision makers, and other municipal officers with solutions. APWA. Members \$20, nonmembers \$30.

Selection and Use of Engineering and Architectural Consultants: Guidelines for Public Agencies. APWA's Institute for Municipal Engineering's latest publication on how to work successfully with engineering and architectural consultants. \$5.

Free Publications

For Washington recipients only: Contact Donna Stallings at (206) 753-6119 or SCAN 234-6119 if you want publications.

FHWA-FL-90-006, Fish Passage Through Culverts. This booklet provides a set of broad guidelines for the engineers and the biologists to design, construct, or maintain an acceptable structure with fish passage capabilities (6 copies available).

FHWA-RT-88-039, Improving Operational Safety on Local Roads and Streets. U.S. Department of Transportation. This pamphlet is intended as a general guide to effective, low-cost methods of improving and enhancing operational highway safety. The guidelines and examples included are based on actual situations and observations made in a series of nationwide reviews (25 copies available).

Improving Guardrail Installations on Local Roads and Streets. U.S. Department of Transportation. This pamphlet is intended as a general guide to effective, low-cost methods of enhancing highway safety with guardrails (15 copies available).

Roadside Improvements for Local Roads and Streets, FHWA. This is a brief 31-page guide for helping to improve safety on local roads and streets (10 copies available).

W-Beam Guardrail Repair and Maintenance, FHWA. This brief guide was prepared under the RTAP by the T² Center in Iowa. It is a very basic guide for recognizing extent of guardrail damage, the process for repairs, and consideration for safety (40 copies available).

Special Report 87-15, Rating Unsurfaced Roads, USCOE. This brief guide has information on inspecting unpaved roads, defining deficiencies, and using a rating system which can be used to prioritize maintenance on these dirt or gravel roads (25 copies available).

FHWA-TS-90-036, Safety Restoration During Snow Removal — Guidelines. This research report addresses the hazards associated with nonfunctioning highway safety features that occur with snow removal operations during both emergency and post-snowstorm cleanup, and how the hazards can be remedied (2 copies available).

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The Technology Transfer (T²) Program is a nationwide effort financed jointly by the Federal Highway Administration (FHWA) and individual state departments of transportation. Its purpose is to translate into understandable terms the latest state-of-the-art technologies in the areas of roads, bridges, and public transportation to local highway and transportation personnel.

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